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ABSTRACT

To address the notion that the cognitive level of young children influences their ability to recall the logical sequence found in stories, four modes of language--story generation, retelling, dictation, and writing--were collected for three weeks from 35 second grade children. Through prior testing with the Goldschmid-Bentler Concept Assessment Kit-Conservation-Form A, children were classed as preoperational (nonconservers) or concrete operational (conservers). The story generation task addressed the issue of the preoperational child's ability to comprehend sequential order in stories and the retelling task measured the preoperational child's ability to remember stories in sequential order. Each of the stories was analyzed according to seven measures of linguistic quantity or language output. Findings indicated conservers, with regard to linguistic quantity measures, used a greater total number of words and total number of dependent clauses than did nonconservers in the four story-language modes combined. With regard to rhetorical quality measures, conservers used the macrostructure categories of initiating event and reaction at a statistically significant level as compared to nonconservers. (HOD)

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The relationship among two levels of cognitive development and the linguistic fluency and rhetorical quality of stories generated, retold, dictated and written by grade 2 children.

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The purpose of this paper is to discuss two aspects of a more extensive study which examined the relationship among two levels of cognitive development and the linguistic fluency and rhetorical quality of stories generated, retold, dictated and written by grade 2 children (Hay, 1984).

Many children in grade 2 are preoperational (nonconservers) or concrete operational (conservers) in their level of thought (Piaget and Inhelder, 1969). The majority of children progress from one level to the next during the primary grade years. Since each level represents distinct thinking capabilities (Piaget, 1969; Piaget and Inhelder, 1969; Goldschmid, 1967), it would be useful for educators to know that such cognitive development is identifiable in the language fluency and rhetorical quality of the stories children of this age level tell, retell, dictate and write.

Significance

The primary significance of the present study lay in the fact that it addressed the controversy (Piaget and Inhelder, 1969; Brown, 1975; Stein and Glenn, 1978) regarding the ability of preoperational thinking children to remember stories in sequential order through prior testing of the cognitive level of the children. Research which generated the controversy (Brown, 1975; Stein and Glenn, 1978) had studied children of a preoperational age (kindergarten and grade 1), but had not actually determined their level of cognitive functioning. The present study did so. In addition to the evaluation of the children's cognitive level, the cognitive dependence of the preoperational child upon observable stimuli was accommodated through use of sequentially ordered pictures in

the story generation task. The pictures were absent in the second task, story retelling. In other words, the story generation task addressed the issue of the preoperational child's ability to comprehend sequential order in stories and the retelling task measured the preoperational child's ability to remember stories in sequential order.

Also of significance was the investigation of the effect cognitive levels of functioning had on four modes of story-language. Godwin (1963) and King (1978) indicated a need to focus research on the four facets of language--speaking, listening, writing and reading. Through the four story-language modes, it was possible to encompass the four language arts. The basis for incorporating the four modes into the present study was derived from the following two sources. First, the Brown (1975) study had utilized story generation and retellinng tasks in an analysis of comprehension and memory for stories. Second, King and Rentel (1981) had used tasks of story retelling, dictation and independent writing in their study of children's narrative abilities. The present study represented an expansion from comparison of two story-language modes (Brown, 1975) and three story-language modes (King and Rentel, 1981) to comparison of four story-language modes - story generation, retelling, dictation and writing. A further reason for the study was to extend the work begun in Grade 1 by one of the authors (Froese, 1983).

Purpose

The primary purpose of this research was to address the notion that the cognitive level (preoperational or concrete operational) of young

children influences their ability to recall the logical sequence found in stories (Piaget and Inhelder, 1969). The effect cognitive level exerted on the child's story-language behavior was analyzed through the child's ability to generate, retell, dictate and write stories.

The second purpose was to examine the quantitative and qualitative aspects of the language generated in the four modes. This purpose was accomplished by measuring the microstructure, or language output, through use of the T-unit and dependent clause (Froese, 1983; Loban, 1963, 1976; Hunt, 1965), and the macrostructure through the use of Rumelhart's (1975) story grammar (ie. setting, initiating event, reaction, action and consequence).

Story language modes referred to the tasks of story generation, retelling, dictation and independent writing.

Hypotheses

Two specific questions were posed in relation to this two-pronged inquiry:

1. Are children classified as conservers able to provide more language output in the four modes (story generation, retelling dictation and writing) than nonconservers?

2. Are children classified as conservers able to provide a greater incidence of specific macrostructures in the four modes (story generation, retelling, dictation and writing) then nonconservers?

Summary of the Design

The subjects in this study were 35 grade 2 children from four individual classrooms in one suburban Winnipeg school. Through prior testing of a sampling of 51 of the 92 grade 2 children with the Goldschmid-Bentler Concept Assessment Kit-Conservation - Form A, it was possible to classify the 11 nonconservers (Score 0-6), 12 transitional conservers (Score 7-10), and 12 conservers (Score 11-12) required for this study.

Each of the conservers and nonconservers provided a total of 12 story-language samples while the transitional conservers provided 6 story-language samples. The four modes of language, story generation, retelling, dictation and writing were collected weekly for three consecutive weeks. The story generation task required each child to tell a story based upon a logically sequenced set of 15 black and white pictures from one of three textless picture books by Fernando Krahn (1981, 1977, 1979). The tape-recorded story was later transcribed. The story retelling task was the child's recollection of the story composed with the aid of the picture sequence. This story was retold without the aid of pictures to a second adult who had not been present at the child's first story telling The story retelling was again tape-recorded for later transcription. The story dictation task was the child's opportunity to compose a story as the researcher transcribed it while the writing task enabled the child to compose and transcribe a story. As a result, two stories were produced in an oral context while two other stories were developed under the constraints of transcription. Moreover there were four stories collected per week from each child classified as

a conserver or nonconserver under four different circumstances, and two stories per week were gathered from children classified as transitional conservers through story dictation and writing.

Each of the stories was analyzed according to seven measures of linguistic quantity or language output: Total Number of T-units, Total Number of Words, Mean T-unit Length, Total Number of Mazes, Total Number of Words in Mazes, Total Number of Dependent Clauses, and Mean Dependent Clauses per T-unit (Loban, 1963, 1976 and Hunt, 1965): and five rhetorical quality measures of story macrostructure: Setting, Initiating Event, Reaction, Action and Consequence (Rumelhart, 1975).

Discussion of Findings

Findings derived from statistical analyses of the two stated questions are discussed in the following statements.

Question 1. Are children classified as conservers able to provide more language output in the four modes (story generation, retelling, dictation and writing) than nonconversers?

Children who were classified as conservers were found to use a greater Total Number of Words and Total Number of Dependent Clauses than did children classified as nonconservers in the four story-language modes combined.

The results of the two-way analysis of variance (B.M.D.P. 2V, Dixon, 1982) revealed that there were statistically significant differences ($p < .01$) between conservers and nonconservers with regard to two measures of language output, the Total Number of Words ($F(1,21) =$

10.65, $p < .005$) and the Total Number of Dependent Clauses ($F(1,21) = 7.61$, $p < .012$) in the four modes (story generation, retelling, dictation and writing) combined. King and Rentel (1981) delineated three steps in the young child's journey from oral to written language. The first of the three steps related well to the Total Number of Words used in the four contexts. King and Rentel (1979) stated, "The first step is the child's ability to sustain an utterance unsupported by prompting, questions and feedback" (King and Rentel, 1979). Moreover, if children who are classified as conservers, concrete operational thinkers are able to express utterances of significant greater length in comparison to those utterances expressed by nonconservers, preoperational thinkers in the four modes of story generation, retelling, dictation and writing, then it would seem that this verbosity is of assistance to the conserver in all four story language tasks and exemplifies the first stage referred to by King and Rentel (1979).

The statistically significant difference between conservers and nonconservers in the Total Number of Dependent Clauses used in the four modes of story generation, retelling, dictation and writing combined may be considered an indirect indication of increased linguistic maturity. Hunt (1965) concluded that the mean T-unit length was an index of linguistic maturity which grew in length due to an increase in subordinate clauses. It is noted that dependent clauses (subordinate clauses) are produced with a statistically significant difference by conservers when compared to nonconservers, a situation which may indicate that conservers are beginning to be able to consolidate more thought into longer units, for as Hunt stated:

> Unless we suppose that there is less thought per word in the writing of older students then we must suppose that as students mature they learn to incorporate a larger and larger body of thought into a single related organization. (Hunt, 1965)

The reason that it is suggested that conservers were beginning to consolidate more thought into longer units is that, should they have accomplished this task in a statistically significant manner, there should also be a statistically significant difference between the two developmental groups with regard to the measure of the Mean T-unit Length which was not the case.

Question 2. Are children classified as conservers able to provide more specific macrostructures in the four modes (story generation, retelling, dictation and writing) than nonconservers?

The children who were classified as conservers used the story macrostructure categories of Initiating Event and Reaction in the four story-language modes combined (story generation, retelling, dictation and writing) as compared to children classified as nonconservers. Furthermore, conservers used the Initiating Event macrostructure category more frequently in the recall task (story retelling) as compared with either the story dictation or writing tasks. Nonconservers, on the other hand, showed no difference between their use of any of the story macrostructure categories in their story retellings as compared with the stories they dictated or wrote.

A two-way analysis of variance (B.M.D.P. 2V, Dixon, 1982) indicated that two macrostructure categories, Initiating Event ($F(1,21) = 7.82$, $p <$

.000) and Reaction ($F(1,21) = 8.80$, $p < .007$), were statistically significant for conservers as compared to nonconservers in the four modes combined. Comparing these findings with those of Stein, and Glenn (1978), it is noted that in the Stein and Glenn study the Initiating Event macrostructure category was the third most readily recalled category, while the Reaction macrostructure category, which in the present study was more like Stein and Glenn's Internal Response category, was the fourth most likely to be remembered category, and one which fifth graders recalled significantly ($p < .05$) more often than first graders. Since, in the present study conservers tended to make significant use of Initiating Event and Reaction macrostructure categories in all four modes as compared with nonconservers, conservers' usage of the two macrostructures may be indicative of a more advanced level of functioning, more comparable to that of grade 5 children than to the grade 1 children studied by Stein and Glenn (1978).

Since the macrostructure category Initiating Event, when submitted to a two-way analysis of variance, indicated that there was a statistically significant effect due to Developmental level ($F(1,21) = 7.92$, $p < .000$) and that there was also a statistically significant interaction between Developmental level and Mode ($F(3,63) = 6.94$, $p < .005$), the interaction was probed by means of multiple t tests ($\alpha = .01$). The result of these analyses indicated that, for conservers, the story generation and retelling tasks had a statistically significant incidence of the Initiating Event macrostructure as compared to the tasks of story dictation and writing while, for nonconservers, the incidence of the Initiating Event macrostructure was statistically significant in the story

generation task as compared to the tasks of story dictation and writing. In other words, with the use of pictures (story generation) both Developmental levels utilized the Initiating Event macrostructure, but when the pictures were no longer present (story retelling) the conservers alone demonstrated a use of the Initiating Event macrostructure.

The previously mentioned finding seems to support the suggestion by Piaget and Inhelder (1969) that preoperational thinkers (nonconservers) are stimulus bound, that is, when the visual stimuli were present in the story generation task, the nonconservers were able to identify and utilize the Initiating Event macrostructure category, but when the stimuli were no longer visible, as in the story retelling, the nonconservers were unable to utilize this macrostructure category. On the other hand, the concrete operational thinkers (conservers) were able to produce the Initiating Event macrostructure when the stimulus was present in story generation and when it was absent in story retelling. Brown (1975) observed that recognition of a story through reviewing pictures was an easier task for kindergarten children who, it would be presumed, were preoperational thinkers than free recall in the absence of the pictures, while grade 2 children were able to recall from memory equally as well as they were able to reconstruct or recognize a story through use of pictures. Furthermore, in the present study it should be noted that use of visual stimuli made a significant difference in the incidence of the Initiating Event macrostructure for both Developmental levels. The two story tasks (dictation and writing) which did not use visual stimuli were shown to have a statistically less significant incidence of the Initiating Event

macrostructure when compared to the task (story generation) which used picture stimuli. This observation seems to stress the value of using visual stimuli to develop young children's recognition and use of narrative structure as has been observed by Poulsen et al. (1979), Brown (1975) and Smith and Bean (1983).

Conclusion

In conclusion, it was found that there was a measurable difference between conservers and nonconservers in the stories they generated, retold, dictated and wrote. Conservers, with regard to linguistic quantity measures, used a greater Total Number of Words and Total Number of Dependent Clauses than did nonconservers in the four story-language modes combined. With regard to rhetorical quality measures, conservers used the macrostructure categories of Initiating Event and Reaction at a statistically significant level as compared to nonconservers. It was also found that the use of visual stimuli aided nonconservers to produce the Initiating Event macrostructure category in story generation, but when the visual stimuli were absent in story retelling, the nonconservers did not remember the Initiating Event macrostructure category. Conservers, on the other hand, used the Initiating Event macrostructure categroy at a statistically significant level in story generation and retelling.

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